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30. The battery of claim 29 wherein the positive electrode has an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

31. The battery of claim 29 wherein the negative electrode has an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

32. The battery of claim 29 wherein both the negative electrode and the positive electrode have an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

33. The battery of claim 29 wherein the separator has a thickness less than about 10 microns.

34. The battery of claim 29 wherein the negative electrode comprises a lithium intercalation compound.

35. The battery of claim 29 wherein the negative electrode comprises lithium metal or a lithium alloy.

36. The battery of claim 29 wherein the negative electrode comprises tin oxide or derivatives thereof.

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37. The battery of claim 29 wherein at least one of the electrodes comprises electroactive particles having an average diameter less than about 100 nm.

38. The battery of claim 29 wherein the positive electrode comprises a composition selected from the group consisting of vanadium oxide, silver vanadium oxide, manganese oxide, lithium manganese oxide, lithium titanium oxide, lithium cobalt oxide, lithium nickel oxide, iron sulfides, molybdenum sulfide and mixtures, composites and derivatives thereof.

39. The battery of claim 29 wherein the separator comprises a polymer.

40. The battery of claim 29 wherein the separator comprises a nonliquid electrolyte comprising a lithium compound between the positive electrode and the negative electrode.

41. The battery of claim 29 further comprising a current collector in electrical contact with the positive electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

42. The battery of claim 41 wherein the current collector is a foil or an expanded mesh.

43. The battery of claim 29 further comprising a current collector in electrical contact with the negative electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

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44. The battery of claim 29 further comprising a current collector comprising graphite paper, the current collector being in electrical contact with the positive electrode or the negative electrode.

52. The battery of claim 29 wherein the surface of at least one of the electrodes at the separator has a root mean square surface roughness less than about 5 microns.

53. The battery of claim 29 wherein the electrodes comprise supplementary electrically conductive particles.

54. The battery of claim 29 wherein at least one electrode has effectively no electroactive particles with a diameter greater than about four times the average diameter of the collection of electroactive particles.

58. The battery of claim 29 wherein the at least one electrode further comprises a binder.

59. (Amended) A battery comprising:

a positive electrode;

a negative electrode;

a separator between the positive and the negative electrode, wherein at least one of the electrodes has an average thickness less than about 9.5 microns and comprises a binder and electroactive particles having an average primary particle diameter less than about 500 nm.

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60. The battery of claim 59 wherein the positive electrode has an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

61. The battery of claim 59 wherein the negative electrode has an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

62. The battery of claim 59 wherein both the negative electrode and the positive electrode have an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

63. The battery of claim 59 wherein the separator has a thickness less than about 10 microns.

64. The battery of claim 59 wherein the negative electrode comprises a lithium intercalation compound.

65. The battery of claim 59 wherein the negative electrode comprises lithium metal or a lithium alloy.

66. The battery of claim 59 wherein the negative electrode comprises tin oxide or derivatives thereof.

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67. The battery of claim 59 wherein at least one of the electrodes comprises electroactive particles having an average diameter less than about 100 nm.

68. The battery of claim 59 wherein the positive electrode comprises a composition selected from the group consisting of vanadium oxide, silver vanadium oxide, manganese oxide, lithium manganese oxide, lithium titanium oxide, lithium cobalt oxide, lithium nickel oxide, iron sulfides, molybdenum sulfide and mixtures, composites and derivatives thereof.

69. The battery of claim 59 wherein the separator comprises a polymer.

70. The battery of claim 59 wherein the separator comprises a nonliquid electrolyte comprising a lithium compound between the positive electrode and the negative electrode.

71. The battery of claim 59 further comprising a current collector in electrical contact with the positive electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

72. The battery of claim 71 wherein the current collector is a foil or an expanded mesh.

73. The battery of claim 59 further comprising a current collector in electrical contact with the negative electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

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74. The battery of claim 59 further comprising a current collector comprising graphite paper, the current collector being in electrical contact with the positive electrode or the negative electrode.

75. The battery of claim 59 wherein the surface of at least one of the electrodes at the separator has a root mean square surface roughness less than about 5 microns.

76. The battery of claim 59 wherein the electrodes comprise supplementary electrically conductive particles.

77. The battery of claim 59 wherein at least one electrode has effectively no electroactive particles with a diameter greater than about four times the average diameter of the collection of electroactive particles.

Please add new claims 78-89 as follows:



78. (New) The battery of claim 29 wherein at least one of the electrodes has an average thickness less than about 5 microns.

79. (New) The battery of claim 29 wherein at least one of the electrodes has an average thickness from about 250 nm to about 2.5 microns.


80. (New) The battery of claim 29 wherein at least one of the electrodes has an average thickness from about 300 nm to about 1 micron.

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81. (New) The battery of claim 59 wherein at least one of the electrodes has an average thickness less than about 5 microns.

82. (New) The battery of claim 59 wherein at least one of the electrodes has an average thickness from about 250 nm to about 2.5 microns.

83. (New) The battery of claim 59 wherein at least one of the electrodes has an average thickness from about 300 nm to about 1 micron.



84. (New) A battery comprising:
a positive electrode;
a negative electrode;
at least one current collector; and a
separator between the positive and negative electrode, wherein at least one of the electrodes has an average thickness less than about 10 microns and wherein the at least one current collector has an average thickness less than about 4.5 microns.

85. (New) The battery of claim 84 wherein at least one of the electrodes has an average thickness less than about 9.5 microns.

86. (New) The battery of claim 84 wherein the positive electrode has an average thickness less than 5 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

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87. (New) The battery of claim 84 wherein the negative electrode has an average thickness less than 5 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

88. (New) The battery of claim 84 wherein the at least one current collector has an average thickness less than about 2.5 microns.

89. (New) The battery of claim 84 wherein the at least one current collector has an average thickness from about 0.25 microns to about 1 micron.

REMARKS

Claims 29-44, 52-54 and 58-77 are pending. By this Amendment, claims 29 and 59 have been amended, and new claims 78-89 have been added. The amendment to claims 29 and 59 is supported by the specification, for example, at page 50, lines 3-10. New claims 78-83 and 85 are supported by the specification, for example, at page 50, lines 6-10. New claim 84 is supported by the specification, for example, at page 2, line 30 to page 3, line 4 and page 51 lines 5-15. Claims 86 and 87 are supported by the specification, for example, at page 36, lines 1-6 and page 50, lines 6-10. Claims 88 and 89 are supported by the specification, for example, at page 51, lines 8-13. No new matter has been introduced by this Amendment.

Claims 29-44, 52-54 and 58-77 currently stand as rejected. Reconsideration of the rejections in light of the following comments is respectfully requested.

35 U.S.C. § 112 Rejections

The Examiner rejected claims 29-44, 52-54 and 58-77 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Specifically, the Examiner asserted that the